



Forest Openings



Temporary opening



Permanent opening

Small forest openings benefit wildlife by encouraging dense sapling reproduction and ground covers that provide a diversity of foraging and nesting substrates for many forest wildlife species. Most wildlife species found in Indiana forests require openings, edges, or early successional stages of forest habitat, to fulfill a portion of needed habitat requirements. An exception to this would be some forest songbirds (forest interior songbirds) which are edge sensitive. When creating openings, care and consideration should be given to the integrity of the forest stand and the habitat it is providing to wildlife species. The object of creating forest openings is to improve the forest habitat for as many species as possible, and not to fragment our remaining forests into smaller, non-forest patches.

Openings can be classified as two types, temporary and permanent. When planning for forest openings, it is important to consider what habitat is being provided on adjoining properties and at the landscape level. If you are managing a 100-acre forest that is surrounded by crop land and grassland, there is no need for a permanent opening, however, temporary openings may be beneficial. Conversely, if your forest is part of a large, contiguous forest area, permanent openings can create additional habitat diversity.

Temporary Openings

Although some temporary openings are created naturally by tornadoes, strong winds or fire, most temporary openings are created when groups of trees are harvested through group-selection¹, shelterwood², or clearcut³ methods. These silvicultural methods are used to stimulate the regeneration of shade intolerant tree species such as oak, cherry, hickory, tulip poplar and ash for the production of future timber. The same methods are also employed to create or maintain habitats for wildlife species dependant on thick stem densities associated with early successional forest communities, such as the ruffed grouse, woodcock, bobcat (a state endangered species), and certain resident and migratory songbirds.

As part of the harvest operation, cull⁴ trees within newly created openings should be

removed or girdled to provide snags for wildlife (see the **Forest Habitat Improvement** Fact Sheet). Although a few scattered mast producing trees can be left in the opening to provide food as the young stand regenerates, the objective should be to minimize shading within the opening. Upon completion of the harvest, a dense growth of tree seedlings and other woody plants quickly become established. Many of the shrubby species initially found in the openings such as dogwood, blackberry, elderberry, and viburnums provide an abundance of food, and a dense understory attractive to many wildlife species. Within 15 years, most of the early successional plants will have been shaded out and replaced with pole-sized timber and mast⁵ producing trees. At this stage, benefits to early successional wildlife decline rapidly. If the objective is to maintain habitat for early successional forest wildlife, harvests should be conducted every 10 to 20 years on a rotational basis to always maintain some portion of the forest in temporary openings. Refrain from harvesting timber during the months of April through July to avoid the accidental taking of the endangered Indiana Bat (*Myotis sodalis*).

The number and size of temporary openings will depend on several factors including total forest acreage, forest age and species composition, and timber and wildlife management goals. In general, the diameter of temporary openings should be at least twice as wide as the height of the surrounding tree canopy. This will insure maximum sunlight penetration and encourage rapid seedling/sapling regeneration. If the objective is to manage for forest interior birds, as well as timber or early successional wildlife, a core area of mature forest should be maintained and temporary openings planned toward the perimeter. To maintain early successional forest habitat, regeneration openings should compose 5 % to 15 % of the forest stand.

Permanent Openings

Permanent openings of herbaceous cover are used when the objective is to maximize the distribution and production of certain wildlife species, which are dependant on both grassland and woodland habitats, within large contiguous blocks of forest. Permanent openings in heavily forested areas provide singing and displaying sites for certain resident and migratory songbirds, wild turkey, and woodcock; green browse for deer, rabbits and other small mammals; insect foraging (bugging) areas for turkey, ruffed grouse, and songbirds; a prey forage base for hawks, owls, and bobcat; and seeds used as food by many wildlife species. Recent studies have shown that insect production can be 25 times higher in openings than in adjacent forest undergrowth. Insects are a primary food for many woodland birds and an important source of protein, critical for rapid growth of young.

The amount of permanent open area should be based on the surrounding landscape. Areas that are interspersed with crop fields, hay fields, pastures and other open habitats will benefit less from permanent openings, than heavily forested areas that have no open area. In general, permanent openings should be 1-5 acres in size and compose no more than 5% of the total forest area.

Log landings and logging roads, that maintain access for forest management activities, and utility right-of-ways are examples of areas that can be maintained and serve as permanent forest openings. These sites should be seeded to a herbaceous cover, or left to grow back to native plant communities (see the **Natural Revegetation** Fact Sheet). Care should be taken to prevent erosion on sloping areas by planting a cover crop such as wheat or oats to hold the soil while permanent cover becomes established.

Seeding openings to a mixture of legumes provides desirable forage for wildlife and production area for insects. A clover mix of Alsike clover (4# per acre), Red clover (2# per acre), and ladino clover (2#/acre) will provide a desirable herbaceous cover on most woodland sites in Indiana. This mix is an attractive green forage for browse and will be productive in attracting insects. For other desirable mixtures and seeding directions see the **Legume Food Plots** Fact Sheet.

Once a good herbaceous opening has been established it will require maintenance. Periodic mowing will remove woody encroachment and promote the herbaceous stand. Mowing should be kept to a minimum, once a year, and should avoid the heavy nesting period. In Indiana mowing after mid

August and prior to mid September, will miss most of the nesting season, and still allow some herbaceous regrowth before winter dormancy. When mowing openings, it is advisable to mow from the center outward to push wildlife that may be using the openings, to the safety of the opening edge. On sites where water is limiting, wildlife **Water Holes** can be incorporated into the design of the opening. A water hole/opening combination can provide a diversity of habitats for wildlife.

As with most habitat developments, the creation of temporary and permanent openings will benefit some wildlife species and negatively impact others. Forest wildlife species that depend on early successional forest habitats will benefit. Depending on the size, maturity, species composition, and arrangement of these forest characteristics, forest interior songbirds that require large contiguous areas of mature forest may be negatively impacted. Landowners are strongly encouraged to seek professional assistance to develop long range forest and wildlife management goals and evaluate the potential impacts at the landscape level prior to initiating forest management practices. Advanced planning will not only maximize landowner satisfaction, but will determine what the next generation of landowners will have to manage and enjoy. Professional wildlife and forest management assistance can be obtained by contacting the District Wildlife Biologist and District Forester for your area.

¹Group-selection is a method of timber harvesting that involves the removal of small groups of trees to meet a predetermined goal of size, distribution, and species within the remaining stand. This method typically maintains 3 or more age or size-classes of trees within a stand (uneven-aged management).

²Shelterwood is a method of timber harvesting that involves the removal of a stand of trees through a series of cuts, spaced over time, that retains part of the tree canopy to shelter and encourage tree reproduction from seeds produced from the remaining tree canopy. This method typically produces a stand of similar age or size classes (even-aged management).

³Clearcut is a method of timber harvesting that removes an entire stand of trees in a single harvest operation. The future stand of trees regenerates from advanced, natural tree production and favors the production of shade intolerant trees of similar age or size classes (even-aged management). In Indiana, most clearcuts range from 1 to 15 acres in size.

⁴Cull trees are trees that have little economic value as future timber or for the creation of other wood products usually due to deformities or because of the species type.

⁵Mast producing trees are trees that produce a fruit or nut. Soft mast refers to fruit such as persimmons, elderberries, cherries, dogwoods and sassafras. Hard mast refers to nuts such as acorns, hickory nuts, walnuts, and beechnuts. Both hard and soft mast trees are important in providing food for wildlife.

Related *Habitat Management Fact Sheets*:

Forest Habitat Improvement
Forest Regeneration
Water Hole Development
Woodland Edge Enhancement

Legume Food Plots
Riparian Zones
Artificial Nesting Cavities
Natural Revegetation

Prepared by the Indiana Department of Natural Resources, Division of Fish and Wildlife. For up-to-date information concerning the Indiana Division of Fish and Wildlife, or for information on the location of your District Wildlife Biologist, visit our website at www.state.in.us/dnr/fishwild/index2.htm

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